

### **REMARKS**

The August 6, 2008, Office Action and the references cited therein have been carefully considered. In view of the amendments presented herewith and the following remarks, favorable reconsideration and allowance of this application are respectfully requested.

Claims 1-16 are currently pending. Claims 6-11 stand withdrawn. Claims 1, 3-5 and 14 are amended herein. Claim 2 is cancelled without prejudice or disclaimer as to the subject matter therein. Following entry of the claim amendments and response, claims 1 and 3-16 will be pending. Applicant respectfully reserves the right to prosecute the subject matter of the cancelled claim in one or more continuation or divisional applications. Support for the amended claims can be found throughout the application as originally filed, *inter alia*, on page 11, lines 1-8; page 13, lines 8-10 and page 15, lines 7-12; as well as figures 5-7 and original claims 3, 6 and 9. Therefore, Applicant submits that no new matter is introduced into the application by way of the instant claim amendments.

#### **Rejections Under 35 U.S.C. § 102(b)**

A. *Prokopius (U.S. Patent No. 3,898,882)*

Claims 1, 12, 13 and 15 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Prokopius (U.S. Patent No. 3,898,882).

Applicant respectfully disagrees and traverses this rejection.

As stated in MPEP § 2131, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicant submits that Prokopius describes a flow measuring apparatus arranged to determine the mass flow rates of the two constituents of the binary gas. In the apparatus, a fluidic humidity sensor [10] determines the mass ratio of the two constituents of the binary gas.

Applicant submits, however, that Prokopius does not describe that the flow measuring apparatus comprises a volume percentage measurement instrument, as required by currently amended claim 1 (and the claims depending therefrom). Because Prokopius does not teach each and every element as set forth in the currently amended claims, Applicant submits that Prokopius does not anticipate claims 1, 12, 13 and 15 are rejected under 35 U.S.C. § 102(b).

Furthermore, Applicant submits that one technical effect of this difference between the claims and the teachings of Prokopius is that the volume percentage of the gas component, the mass flow of which is to be measured, may be determined precisely and continuously, even if the gas has more than two components. This provides for a continuous and precise measurement of the different gas parameters of the gas, thereby rendering it possible to continuously and precisely determine the mass flow of the gas component. Applicant submits that the method of the present invention allows for the continuous and precise determination of the mass flow of the gas component in a gas having more than two components, even when the pressure of the gas component in the gas changes.

Applicant submits that the currently amended claims are not obvious from the teachings of Prokopius, in that Prokopius does not teach or suggest the possibility of determining the volume percentages of the gas constituents in the binary gas. Instead, Prokopius describes that "... unless both the pressure and temperature of the fluid being delivered to the oscillator [which is part of the fluidic humidity sensor] are constant, some deviation of the pulsation frequency from normal will be experienced leading to inaccurate measurements of the mass flow rate." *See* Prokopius, col. 3, lines 60-65.

Moreover, Applicant submits that Prokopius teaches away from the solution of claim 1, in that Prokopius suggests maintaining the temperature and pressure of the gas constant, e.g. by enclosing the oscillator of the fluidic humidity sensor in an oven (*See* col. 3, lines 65, to col. 4, line 2).

Applicant also submits that Prokopius does not teach or suggest the possibility of measuring the mass flow of a gas component in a gas having more than two components. Applicant submits that if a gas comprises three components or more, it is not possible to measure the mass ratio of one of the gas components in relation to the other gas components in a fluidic humidity sensor. Applicant submits that Prokopius does not even relate to the problem of

measuring the mass flow of one component in a gas having more than two components, relating instead to a binary gas (i.e., a gas having only two components).

As Prokopius does not teach each and every element as set forth in the currently amended claims, Applicant submits that Prokopius does not anticipate claims 1, 12, 13 and 15 under 35 U.S.C. § 102(b). Furthermore, for the reasons set forth above, Applicant submits that the currently pending claims are not rendered obvious by Prokopius. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1, 12, 13 and 15 under 35 U.S.C. § 102(b).

*B. Proffitt (U.S. Patent No. 5,415,024)*

Claims 1-5, 12 and 14-16 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Proffitt *et al.* (U.S. Patent No. 5,415,024).

Applicant respectfully disagrees and traverses this rejection.

As noted previously and stated in MPEP § 2131, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicant submits that Proffitt describes an instrument and a method for determining the composition and/or individual component flow rate in a three-component fluid system containing two liquids and a gas or a liquid, a solid and a gas or two solids and a gas. Applicant submits, however, that Proffitt does not relate to the determination of fluids consisting of one or more gas components. Furthermore, Applicant submits that Proffitt does not describe that the instrument comprises a volume percentage measurement instrument, as required by currently amended claim 1 (and the claims depending therefrom). Because Proffitt does not teach each and every element as set forth in the currently amended claims, Applicant submits that Proffitt does not anticipate claims 1-5, 12 and 14-16 under 35 U.S.C. § 102(b).

As noted above, the apparatus of Proffitt is not described as comprising a volume percentage measurement instrument. Instead, Applicant submits that Proffitt determines the volume of a gas by calculation from the ideal gas law (*See*, for example, claim 1 of Proffitt).

Moreover, Applicant submits that the volume of gas determined by Proffitt is the ratio of gas within a composition comprising one or more other phases (viz., solid, liquid); the volume of gas determined by Proffitt is thus not the measurement of a first gas component within a gas.

Applicant submits that the method of the present invention allows a precise and continuous determination of the volume percentage of the gas component, the mass flow of which is to be measured, even if the gas has more than two components. This provides for a continuous and precise measurement of the different gas parameters of the gas, thereby rendering it possible to continuously and precisely determine the mass flow of the gas component.

Applicant submits that claim 1 is not rendered obvious by Proffitt, in that Proffitt does not teach or suggest the possibility of determining the different volume percentages of gas components of a gas. Instead, Applicant submits that Proffitt is related to a different problem, namely the problem of determining the ratio of fluids in a multiphase system, where the composition of the gas phase is not analyzed at all. Applicant submits that because Proffitt does not teach or suggest the possibility of measuring the mass flow of a specific gas component in a gas having more than two components and does not teach or suggest the possibility of using a volume percentage measurement device, Proffitt does not render claims 1-5, 12 and 14-16 obvious.

As Proffitt does not teach each and every element as set forth in the currently amended claims, Applicant submits that Proffitt does not anticipate claims 1-5, 12 and 14-16 under 35 U.S.C. § 102(b). Furthermore, for the reasons set forth above, Applicant submits that the currently pending claims are not rendered obvious by Proffitt. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-5, 12 and 14-16 under 35 U.S.C. § 102(b).

C. *Tjugum et al Cited Reference*

The Office Action states that the prior art reference by Tjugum (of record) is considered pertinent to Applicant's disclosure. (S.A. Tjugum, *et al.*, "Multiphase flow regime identification by multibeam gamma-ray densitometry", Meas. Sci. Technol. 13 (2002), pp. 1319-1326. Applicant submits that Tjugum discloses improving known multi-component fluid analyzers by

introducing a direct gas volume fraction measurement device to existing instrumentation. Applicant submits though that Tjugum does not relate to the determination of the mass flow of a specific gas component in a gas having one or more known gas components. Instead, Applicant submits that Tjugum relates to determining a gas volume fraction in order to determine multiphase oil, water and gas flow, and hence relates to a different device and method compared to the present invention.

Moreover, Applicant submits that the term “gas volume fraction” as used throughout Tjugum relates to the volume ratio of gas compared to the volume ratio of liquid, such as water or oil, and that Tjugum does not relate to the determination of the different specific gas components within a gas flow of one or more gas components. A determination of “gas volume fraction” is a determination of the volume fraction of a gas compared to the volume fractions of other phases, such as liquid and/or solid. Applicant submits that this is different from the volume percentage measurement instrument as described in the present application, since this instrument relates to the determination of the volume percentage of the first gas component within the gas compared to the volume percentages of any other gas components within the gas. Thus, Applicant submits that Tjugum is not related to the same technical area as the present application, and Tjugum does not render the currently amended claims obvious. Accordingly, Applicant respectfully submits that Tjugum is not relevant to the present invention.

**CONCLUSION**

In view of the foregoing, Applicants respectfully request an indication of allowance of all claims.


If the Examiner has any questions relating to this response, or the application in general, she is respectfully requested to contact the undersigned so that prosecution of this application may be expedited.

Respectfully submitted,

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